Space Weather Forecast

Issued on Tuesday 19 November 2024 at 01:04 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Faster solar winds solar winds bring a likelihood of enhanced geomagnetic activity at times.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Moderate during the past 24 hours, with recent Moderate class flares observed. There are currently eight sunspot regions on the visible disc. A newly numbered region, near the southeast limb, is showing some magnetic complexity, although this remains difficult to analyse due to its viewing angle. There is a lot of magnetic looping associated with this region as seen in imagery. The largest sunspot region remains in the far west, and this region shows simplification and a lack of activity, although this region is beginning to rotate off the disc and around the western limb. No Earth-directed Coronal Mass Ejections (CMEs) were observed over the past 24 hours in available imagery.

Solar Wind / Geomagnetic Activity: Solar winds were indicative of a slow regime at the start of the period, before transitioning into fast wind from a coronal hole, which is currently near the western limb. Solar winds reached between 300-490km/s, peaking at 18/1441 UTC, before declining to remain near the slightly elevated to background threshold, near 400km/s at present.

The magnetic field, Bt, was weak to moderate. The north-south component was weakly negative throughout the period. The net result of the above solar wind measures was Quiet (0-2Kp) geomagnetic activity.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Low to Moderate activity is expected, with the arriving regions contributing to a daily chance of Moderate flares and a persistent slight chance of isolated Strong flares.

Solar Wind / Geomagnetic Activity: No Earth-directed CMEs currently feature in the forecast.

The forecast is dominated by coronal hole fast winds. Earth is currently in a fast wind regime from a coronal hole near the western limb. Solar winds are between slightly elevated to background, currently near 400km/s, which looks set to continue through Day 1 (19 Nov), perhaps reaching 450km/s. Solar winds may wane into Day 2 (20 Nov) before a further coronal hole fast wind

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enhancement is likely on Days 3 and 4 (21-22 Nov), with solar winds returning to slightly elevated or elevated levels.

Quiet to Unsettled (Kp0-3) conditions expected through much of the period, with a chance of Active (Kp4) intervals through Day 1 (19 Nov), then mostly Quiet by Day 2 (20 Nov). Activity is expected to increase Days 3 and 4 (21-22 Nov) becoming generally Unsettled to Active (Kp3-4) with a chance of G1 Minor Geomagnetic Storm intervals.

Energetic Particles / Solar Radiation: There is a daily slight chance of S1/Minor solar radiation storms as the current largest sunspot region nears the western solar horizon.

Geomagnetic Storms

Geomagnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	**G1 to G2**	No	20	1	20	20
Strong	**G3**	No	1	1	1	1
Severe	**G4**	No	1	1	1	1
Extreme	**G5**	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	**R1-R2 (M Class)**	Yes	50	50	50	50
Very Active	**R3-R5 (X Class)**	No	10	10	10	10

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Solar Radiation Storms (High Energy Protons)

Radiation Storms Probability (Exceedance)	Level ($cm^{-2}sr^{-1}s^{-1}$)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	**≥ S1**	No	5	5	5	5
Very Active	**≥ S3 ***	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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